

**CHAPTER 4.0**  
**POTENTIAL AIR QUALITY IMPACTS FROM INCREASED AVAILABILITY AND**  
**UTILIZATION OF PRB COAL**

**4.1 OVERVIEW**

In the EIS, SEA performed a detailed analysis of the potential impacts of the project alternatives based on the anticipated emissions of the so-called criteria pollutants from locomotives at three levels of operation: 20, 50, and 100-million tons of coal transported annually by DM&E. SEA's methodology and its results concerning locomotive emissions were upheld by the court in Mid States (see 345 F. 3d. at 540-41) and therefore are no longer at issue here.

However, the court in Mid States directed the Board to examine the potential indirect air quality impacts of increased coal consumption that might result from lower transportation rates as a result of this project.<sup>1</sup> The EIS had acknowledged that the Clean Air Act's requirements would encourage many utilities to shift to western, low-sulfur coal that the new line would carry, but had reasoned that such a shift would occur with or without the new line, since two other carriers already transport low-sulfur coal out of Wyoming and DM&E would merely be an additional competitor in a growing market, albeit one that would provide a shorter and straighter route. The court found this reasoning unpersuasive.<sup>2</sup> The court also rejected the argument that the potential air quality impacts of burning low-sulfur coal were too speculative and far removed from the Board's approval of construction and operation of this rail line for the Board to be required to consider them in its NEPA analysis in this case.<sup>3</sup> The court noted that the EIS scoping notice in this case had stated that the Board would "[e]valuate the potential air quality impacts associated with the increased availability and

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<sup>1</sup> 345 F. 3d. at 548-50.

<sup>2</sup> Id. at 549.

<sup>3</sup> Id.

utilization of Powder River Basin coal.”<sup>4</sup> The court also faulted the EIS for failure to address three computer simulation models (PROSYM, PROMOD, and GE-MAPS) identified by a commenter that allegedly could be used to forecast the effects of the DM&E project on the consumption of coal.<sup>5</sup>

Petitions for rehearing of the court’s determination on this and other issues were filed by the Board and various other parties. All of the petitions for rehearing were denied without an opinion on January 30, 2004. SEA then began its work on remand on this issue.

In response to the court’s decision, SEA prepared a Draft SEIS for which it conducted an additional analysis addressing the concerns raised by the court regarding the potential impacts of increased coal consumption that could result from the DM&E project. SEA’s Draft SEIS analysis focused on two primary questions:

- (1) How would the transportation rates for PRB coal change with DM&E’s entrance into the market place?
- (2) Given the change in transportation rates, what, if any, would be the potential air quality impacts?

To answer these questions, SEA reviewed available computer simulation models and identified an appropriate model for the Draft SEIS analysis, determined appropriate model inputs for the change in transportation rates for use in a sensitivity analysis using this model, and evaluated the results of the model sensitivity runs. Each step is summarized below.

### Model Selection

For the Draft SEIS, SEA researched what model, if any, could yield information that would be useful in addressing the two primary questions before SEA. SEA initially determined that the analysis of these issues would be best with use of a national model that

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<sup>4</sup> Id. at 550.

<sup>5</sup> Id.

includes forecasts into the future, if such a model was available. A national model was required, SEA believed, because SEA's analysis would have to compare the use of PRB coal to coal from other regions, as well as coal usage compared to other fuels. Forecasts would be required to determine how the mix of coal sourcing would change over time.

As discussed in the Draft SEIS (at pages 4-4 to 4-9), SEA gathered information on several models and researched in detail five models: the three models referenced in the court decision in Mid States (PROSYM, PROMOD, and GE-MAPS); the Environmental Protection Agency's (EPA) Integrated Planning Model (IPM); and the Department of Energy, Energy Information Administration's (EIA) National Energy Modeling System (NEMS). In addition, SEA had discussions with both EPA and EIA, and met informally with EIA to further discuss modeling options.

Based on all the information SEA gathered, SEA determined that it would be appropriate to use EIA's NEMS model for the Draft SEIS. This coal supply and demand forecasting model, which also quantifies environmental impacts, appeared to SEA to be designed to address the exact issues that the court directed the Board to assess, if possible, on remand.

As the Draft SEIS explains, NEMS, the model developed by EIA, is a national coal supply and demand forecasting model, which also quantifies some associated air emissions impacts. The NEMS model incorporates inter-regional transportation costs that are designed to reflect supply and demand in U.S. energy markets.<sup>6</sup> The coal transportation costs in NEMS are based on actual transportation rate information between specific mines and specific plants that is collected by the Federal Energy Regulatory Commission (FERC) and EIA. The actual data are then aggregated to determine an average transportation rate between the various supply and demand regions within NEMS. NEMS looks at the entire breadth of the national energy marketplace, simulating energy demand, growth, new

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<sup>6</sup> The coal transportation *rates* charged by rail carriers become transportation costs within NEMS for transporting coal from one region to another.

generation (by fuel type and amount), and cost (including fuel cost). And the NEMS model contains a Coal Market Module (CMM) that provides forecasts of U.S. coal production, consumption, exports, imports, distribution, and prices. The coal production submodule of the CMM determines supply curves for each of 14 supply regions and 12 coal types. The coal distribution submodule determines the least-cost supplies of coal from the supply regions to 14 demand regions. These data reflect the minemouth price of coal plus the transportation costs. Moreover, coal supply and demand is forecasted 20 to 25 years into the future, which allows the effects over time to be quantified. NEMS also calculates the air emissions associated with projected future electricity generation. The data on emissions reflected in NEMS includes sulfur dioxide (SO<sub>2</sub>), nitrogen oxides (NO<sub>x</sub>), carbon dioxide (CO<sub>2</sub>), and mercury.

For all of these reasons, SEA determined, following consultations with EIA, that the NEMS model would be well suited for the analysis requested by the court. Specifically, SEA concluded that by modifying the existing transportation costs within NEMS (to simulate reductions in transportation costs from the PRB to the marketing regions targeted by DM&E), changes in the demand for coal from different supply regions that could result from this construction project could be compared to the case where there are no changes in transportation costs—and the resulting change in emissions that are driven by changes in transportation costs could be evaluated. SEA also determined that EIA produces an Annual Energy Outlook report that could be used as a base-line for these comparison purposes.<sup>7</sup>

In researching the potential benefits of NEMS, SEA also took into account the fact that NEMS is a well-established model.<sup>8</sup> It is used by a variety of government agencies for energy use prediction. NEMS is also widely used for a number of special analyses at the request of the White House, U.S. Congress, and other government agencies. Additionally, the coal forecasts in NEMS have been used in rate reasonableness cases before the Board. And while EPA's IPM model likely could also provide meaningful information on the

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<sup>7</sup> SEA had relied heavily on EIA's Annual Energy Outlook reports in the preparation of the EIS for this project.

<sup>8</sup> Additional information on NEMS is available at <http://www.eia.doe.gov>.

remanded issue, SEA concluded that the NEMS model would be preferable because IPM itself relies on NEMS's energy-related data.

Finally, SEA determined that use of the NEMS model would be cost effective, since EIA agreed to run the model for the Board at no cost in this case. Another cost savings is that no additional runs would be required to create the base-line case since EIA's most recent Annual Energy Outlook 2005 report (AEO2005) would already fulfill this need.

#### Development of Model Inputs

After EIA concurred that its model would help the Board quantify the effects of the DM&E construction project and agreed to run a sensitivity analysis for SEA using NEMS showing the effects of variations in transportation costs on projected coal use and associated emissions, SEA provided EIA staff with the appropriate set of cases to be run.<sup>9</sup>

As explained in more detail in the Draft SEIS, SEA selected the range of potential rate changes to be examined in the rate sensitivity analysis based on the Board's assessment of the mileage savings of DM&E's route and DM&E's expected market shares in the 1998 Decision, which preliminarily approved the construction of DM&E's proposed line based on a record that was complete except for the environmental analysis.<sup>10</sup> In that decision, the Board found that DM&E would be a financially viable competitor for the transportation of coal from the PRB to electric power plants in the marketing regions targeted by DM&E (particularly the Midwest) because DM&E would have a shorter, straighter route to its core markets<sup>11</sup> than the routes of the two carriers already serving the PRB—BNSF and UP.

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<sup>9</sup> Draft SEIS, at Appendix F, correspondence with EIA.

<sup>10</sup> In Mid States, petitioners had argued that the Board should have updated all of the traffic and profitability projections relied upon in the 1998 Decision before giving final approval for DM&E to construct and operate the new line in the 2002 Decision. The court specifically rejected the argument that the Board should have updated the 1998 data. See 345 F.3d at 550-552. Therefore, SEA has relied on the data in the 1998 Decision in preparing the SEIS.

<sup>11</sup> DM&E's core markets – the Great Lakes, Upper Midwest, Upper Mississippi River, Chicago Gateway/Illinois River and Ohio River markets – are described in more detail in the Draft SEIS at pages 4-11 to 4-15 and at pages 23-24 and footnote 44 of the Board's 1998 Decision.

Also, as detailed in the Draft SEIS, SEA asked EIA to adjust the average transportation costs in the NEMS Coal Market Module, or CMM, to reflect SEA's estimate of the entrance of DM&E into the PRB. Because there is no available information on the specific rates that DM&E might ultimately decide to charge, SEA assumed that the transportation rate savings for shippers using DM&E's route would be proportional to the mileage savings of DM&E's route over the routes of UP and BNSF, the two carriers that now serve the PRB.<sup>12</sup> Those transportation rate savings are expressed as a percentage reduction to the inter-regional transportation costs contained in the NEMS model.

To determine the range of adjustments to apply, SEA undertook a three-step process, with each step based on information in the Board's 1998 Decision. SEA first determined the average mileage savings that would result from the operation of DM&E's coal trains to the plants in DM&E's core markets. SEA then determined how the average mileage savings to the plants would translate to savings to each of the DM&E core markets, based on DM&E's expected market shares. Finally, SEA assigned the DM&E core market savings to the corresponding NEMS inter-regional transportation costs.<sup>13</sup>

To determine whether a rate reduction directly proportional to the mileage savings anticipated in the Board's 1998 Decision would significantly affect consumption of PRB coal and resulting air emissions, SEA asked EIA, in its transportation rate sensitivity analysis using the NEMS model, to assume four different scenarios: (1) a reduction in transportation rates equivalent to the mileage savings of DM&E's route over the routes of UP and BNSF (the most likely scenario based on the 1998 Decision); (2) a reduction twice that size; (3) an increase in transportation rates comparable in size to the decrease in the first scenario; and (4) an increase comparable in size to the decrease in the second scenario. By examining various alternative scenarios in a sensitivity analysis, SEA determined it would be better able

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<sup>12</sup> This appears to be a very conservative estimate of likely cost-related reductions in transportation rates. The actual percentage cost reductions associated with shifts from BNSF and UP to DM&E coal movements are likely to be less than in proportion to reductions in length of haul, since this ignores fixed costs of originating and terminating coal shipments.

<sup>13</sup> See Draft SEIS, at pages 4-11 to 4-19 for a detailed discussion of SEA's determination of transportation rate scenarios.

to assess the extent to which consumption of PRB coal and resulting air emissions might be influenced by changes in transportation rates.

More specifically, SEA asked EIA to run the NEMS model using the following four alternative scenarios:<sup>14</sup>

Scenario 1: 3.6 percent reduction in transportation costs from supply regions NW and SW to demand regions OH, EN and CW; 1.9 percent reduction from supply regions NW and SW to demand region KT.<sup>15</sup>

Scenario 2: 7.2 percent reduction in transportation costs from supply regions NW and SW to demand regions OH, EN and CW; 3.8 percent reduction from supply regions NW and SW to demand region KT.

Scenario 3: 3.6 percent increase from supply regions NW and SW to demand regions OH, EN and CW; 1.9 percent increase from supply regions NW and SW to demand region KT.

Scenario 4: 7.2 percent increase from supply regions NW and SW to demand regions OH, EN and CW; 3.8 percent increase from supply regions NW and SW to demand region KT.

In its report of the results of the rate sensitivity analysis,<sup>16</sup> EIA referred to these as the “Low4pct” scenario, “Low7pct” scenario, “High4pct” scenario, and “High7pct” scenario, respectively.

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<sup>14</sup> Draft SEIS, Appendix F, SEA’s correspondence with EIA.

<sup>15</sup> The Supply Regions at issue here include the Northern Powder River Basin (NW) and the Southern Powder River Basin (SW). The Demand regions include Ohio (OH); Indiana, Illinois, Michigan, and Wisconsin (EN); Kentucky and Tennessee (KT); and Minnesota, Iowa, North Dakota, South Dakota, Nebraska, Missouri, and Kansas (CW).

<sup>16</sup> Draft SEIS, at Appendix G.

SEA asked EIA to focus its analysis on the years 2010, 2015 and 2025 so SEA could evaluate the effects of the project on coal usage and air quality over time. These years correspond to the study periods in the Board's 2002 Decision<sup>17</sup> and EIA's AEO2005 forecasts (which include information through 2025).

Finally, SEA requested that EIA report the results of the air emissions part of its study with respect to the so-called "criteria" pollutants, and also with respect to CO<sub>2</sub> and mercury, as the NEMS model also has the ability to estimate those emissions.<sup>18</sup> There were no Federal standards for either CO<sub>2</sub> or mercury at the time EIA ran the sensitivity analysis in this case. As discussed in more detail in the Draft SEIS, however, EPA subsequently issued rules to regulate mercury and additional regulations for SO<sub>2</sub> and NO<sub>x</sub> emissions at power plants; those rules will apply to the utilities in DM&E's core markets.

### Modeling Results

Using SEA's rate sensitivity inputs, EIA executed the necessary model runs and provided the results of its analysis to SEA in the form of a report.<sup>19</sup> As explained in more detail in the Draft SEIS, the EIA report showed that, contrary to the court's expectation in Mid States, the changes in coal transportation rates associated with the PRB Expansion Project would likely produce little change in total coal production, coal consumption, coal-fired electricity generation, and electrical power sector emissions. According to the report,

- The main impact of reducing the transportation costs of PRB coals would be to slightly change the mix of coals used, but there would be little change in the overall national consumption or production of coal.
- Electricity generation by coal would be almost unchanged under all four transportation rate scenarios.

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<sup>17</sup> To account for the time that had elapsed since the 1998 Decision, the Board developed a Revised Table that shifted DM&E's original coal tonnage forecasts by three years.

<sup>18</sup> NEMS does not project carbon monoxide and particulate matter. Therefore, SEA calculated those emissions separately using NEMS data.

<sup>19</sup> Draft SEIS, Appendix G.

- The Low4pct scenario—the most likely scenario to result from the DM&E rail construction project—shows only de minimis changes in coal production, consumption, and coal-fired energy generation. Even under the other 3 scenarios studied, at the national level, the projected changes in total coal production, consumption and coal-fired electricity generation would be very small.
- Changes in regional projections of coal consumption, production, and coal-fired generation would be similarly small.

The report also showed that the very modest changes in coal usage associated with the project would result in minimal changes in emissions from the electric power sector. As the EIA Report explained, the Clean Air Act Amendments of 1990 would dampen any project-related changes in SO<sub>2</sub> and NO<sub>x</sub> emissions, since power plants must comply with mandated emissions limits even if they change their coal use.<sup>20</sup> And changes in SO<sub>2</sub> and NO<sub>x</sub> emissions resulting from this project would be further reduced by the Clean Air Interstate Rule (CAIR) adopted by EPA on March 15, 2005, after completion of the sensitivity analysis in this case.

In particular, the NEMS modeling results showed:

- SO<sub>2</sub> emissions would vary only slightly within each of the five Electricity Market Module (EMM) regions. Indeed, there would be virtually no change when the regions are examined in aggregate, or on a national basis.<sup>21</sup>
- There would be almost no change in regional and national NO<sub>x</sub> emissions compared to the AEO2005 reference case.<sup>22</sup>
- CO<sub>2</sub> emission rates differ only slightly across coal types, so that any changes in forecasted emissions on a national or regional basis would primarily be due

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<sup>20</sup> Id., at page 6.

<sup>21</sup> Id., at pages 9 to 14.

<sup>22</sup> Id., at page 6.

to variations in the forecasted quantities of the overall amount of coal that would be consumed.<sup>23</sup>

- Mercury emissions would increase less than one percent nationally, even when all sources of coal, including so-called “waste coal,” are considered (waste coal is the low-energy value discards of the coal mining industry accumulated primarily in the Eastern United States between 1900 and 1970 and which has a higher mercury content). In one region, it appears that mercury emissions would be somewhat larger. However, this increase would be offset by a corresponding decrease in a neighboring region. Moreover, the regional increase shown for mercury emissions reflects how the NEMS model accounts for waste coal more than an increased consumption of total coal.<sup>24</sup> Finally, the NEMS modeling was completed before any mercury regulations had been adopted, and thus the projected mercury emissions in the NEMS study may be overstated. After the rate sensitivity analysis was performed, EPA finalized new Federal regulations limiting emissions of mercury from coal-fired power plants, which will reduce total nationwide mercury emissions from utilities. As EIA indicated, any actions taken to comply with EPA’s new mercury rule will likely dampen the impacts of the changes in coal transportation rates as a result of this project.<sup>25</sup>

The NEMS study did not examine the potential impact of this project on air emissions of carbon monoxide (CO) and particulate matter (PM10) because the NEMS model does not evaluate those pollutants. However, SEA itself estimated the impact on those emissions that would result from the slight increase in PRB coal production shown by the NEMS model, using NEMS data. SEA determined, comparing the Low4pct and Low7pct scenarios to the AEO2005 reference case for all the study periods (2010, 2015, and 2025) that only a small

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<sup>23</sup> Id., at pages 7-8.

<sup>24</sup> Id., at page 6.

<sup>25</sup> Id., at page 7.

(less than 1 percent) change in CO and PM10 emissions would likely occur as a result of the project.<sup>26</sup>

### Potential Local Impacts

The Draft SEIS also made it clear that the extent of any local impacts on air emissions that the project might have cannot be determined using the NEMS model, which is essentially a national and regional modeling tool. The NEMS study indicates that, under the Low4pct scenario, up to 3 million additional tons of coal could be used in 2025 over the 1,425 million tons already projected to be burned without such a project-related decrease in PRB coal transportation rates. But as the Draft SEIS explained, to be able to reasonably foresee the likely impacts of this project on a local level, one would need to know not only what existing or new power plants would actually use DM&E's service, but also whether they would otherwise not burn PRB coal, not burn as much coal, or burn a different mix of coal. This cannot be determined in advance with any degree of confidence for a variety of reasons:

- DM&E does not yet have commitments from utilities to serve specific power plants.
- DM&E's core market covers a broad geographic area and DM&E would likely serve only a portion of the plants in the market.
- To the extent existing power plants in DM&E's core market are already using PRB coal, DM&E's service would simply substitute for delivery of coal by BNSF or UP.
- It is unclear how much additional PRB coal existing power plants would burn as a result of this project because how much PRB coal a particular power plant would decide to use would depend on myriad factors.
- It is not possible to determine exactly when or where new coal-burning power plants will be built, how much PRB coal would be supplied to these new plants, and/or whether the coal would be moved by DM&E.

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<sup>26</sup> Draft SEIS, at pages 4-38 to 4-41.

- Mercury regulation may lead to decreased reliance on PRB coal because PRB coal is higher in mercury than other coals.
- Government regulation of power plant emissions would dictate the level of allowable emissions on a local basis.

In short, as SEA disclosed in the Draft SEIS, SEA could not rule out, based on the NEMS analysis, the possibility that, at certain locations, there could be more PRB coal consumed as a result of this project—and, therefore, an increase or decrease in certain emissions.<sup>27</sup> But because of the inherent uncertainty and the data gaps discussed above and in the Draft SEIS, the information SEA would need to determine the locations where emissions would increase on a local basis—and to measure the amount of such an increase—is unavailable. Thus, any attempt by SEA to quantify changes in project-related air emissions on a local basis would lack a sound foundation and would instead be largely conjectural.

As the court noted in Mid States, when the information needed to examine reasonably foreseeable impacts is missing and unavailable, the Council on Environmental Quality (CEQ) rules at 40 CFR 1502.22 provide that the agency should first explain that the information is incomplete or unavailable. The CEQ rules provide that the agency should then explain the relevance of the incomplete or unavailable information to evaluating reasonably foreseeable significant adverse impacts on the human environment; summarize the existing credible scientific evidence that is relevant to evaluating the reasonably foreseeable significant adverse impacts on the human environment; and evaluate the potential impacts given the informational limitations that it faces.

In undertaking all of this analysis in the Draft SEIS, SEA explained that the missing and unavailable information that would be needed to determine the specific location and

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<sup>27</sup> The Draft SEIS presents existing, credible scientific evidence on each of the pollutants that are emitted by power plants: sulfur dioxide, nitrogen oxides, carbon monoxide, particulate matter, carbon dioxide, and mercury. Draft SEIS, at pages 4-45 to 4-51.

extent of any project-related local impact on coal consumption had precluded SEA from being able to provide a quantitative assessment of changes in potential air emissions on a local level resulting from this project.<sup>28</sup> As SEA noted, the extent to which this project would result in local air quality impacts would depend on whether the relatively small amount of additional coal consumed as a result of this project would be widely dispersed to numerous power plants in DM&E's core markets—in which case the local impacts on air emissions would also be widely dispersed and therefore likely be de minimis—or, alternatively, used by a small number of power plants concentrated within a narrower geographic area, in which case there could be some adverse air emissions impacts on a local basis. Moreover, SEA stated, it would need to know not only what existing or new power plants would actually use DM&E's service but also whether they would not otherwise burn PRB coal, not burn as much coal, or burn a different mix of coal.<sup>29</sup> However, as explained in the Draft SEIS, SEA could not make a reasoned determination of these issues in advance.

SEA further detailed in the Draft SEIS that, to the extent that there would be air emission impacts on a local basis as a result of this project, applicable environmental regulations—including the Clean Air Act Amendments of 1990, the lower caps on NO<sub>x</sub> and SO<sub>2</sub> imposed in CAIR, and the mercury reductions mandated by EPA's new mercury rule—would act to constrain these air emissions.<sup>30</sup> As SEA explained, any new power plants that use PRB coal transported by DM&E would have to comply with all applicable licensing requirements and emissions restrictions governing new power plants, thereby limiting the potential impact of their air emissions. Finally, any significant changes in the blend of coals burned by individual power plants that might use PRB coal transported by DM&E also would be subject to regulatory constraints.

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<sup>28</sup> Id. at pages 4-42 to 4-44.

<sup>29</sup> Id. at page 4-43.

<sup>30</sup> SEA notes that on October 21, 2005, in response to a number of petitions for reconsideration, EPA issued a notice of proposed rulemaking to reconsider and seek comment on several aspects of its final mercury rule. EPA's comment period ended on December 19, 2005. Additional information on the status of EPA's mercury rule is available at EPA's website: [www.epa.gov/air/mercury\\_rule](http://www.epa.gov/air/mercury_rule).

### Conclusions of the Draft SEIS

In response to the court's remand, SEA conducted a thorough and extensive evaluation of how consumption of PRB coal would change with reduced transportation rates that might result from this project and what effect, if any, these changes would have on air quality. SEA presented the results of this analysis in the Draft SEIS. Based on the NEMS study, SEA concluded that little additional coal would be consumed nationally and regionally as a result of this project, and that the associated impacts on national air emissions would be minor. Regionally, impacts on air emissions generally would also be small. Any regional increases would be offset by decreases in other regions and constrained by applicable environmental laws, including new regulatory requirements that are not reflected in the NEMS study: CAIR and EPA's mercury rule.

SEA also concluded that it could not rule out that, at certain locations, there could be more coal consumed as a result of this project, and, therefore, increased air emissions on a local level. However, because the information SEA would need to determine the specific location and meaningfully measure increased air emissions on a local basis could not be ascertained with any degree of confidence, SEA determined that any attempt to predict and evaluate potential increased air emissions on a local level would be largely speculative. Therefore, SEA followed the procedures established by CEQ at 40 CFR 1502.22(b) for addressing impacts where critical information is unavailable or incomplete.

Given the minor increases in coal consumption and air emissions on a national and regional basis, and the lack of critical information needed to quantify impacts on a local basis, SEA did not recommend additional air quality mitigation beyond that previously imposed by the Board in its 2002 Decision. SEA did examine, in the Draft SEIS, whether there are possible mitigation measures that could address the potential impacts on local air emissions, notwithstanding the lack of information such as the individual plants that would use DM&E and how much PRB coal these plants would consume above the amount of PRB

coal they would consume anyway using BNSF or UP. But, as SEA noted,<sup>31</sup> the Board could not impose environmental mitigation directly on power plants in a case involving a railroad's request for authority to construct and operate a new rail line. And even if SEA could fashion a mitigation measure for DM&E that could appropriately limit the amount of PRB coal to be delivered to particular plants, SEA would not recommend such a mitigation measure, because it would ultimately be ineffective. That is because, as SEA explained, if DM&E could only deliver a certain amount of PRB coal to a particular power plant (or plants), those plants could simply look to BNSF or UP to supply any additional PRB coal that they might want. Moreover, it has never been the Board's policy to restrict the flow of interstate commerce by limiting the amount of traffic a railroad can carry over a rail line or deliver to any particular customer.

## **4.2 OVERVIEW OF COMMENTS ON THE DRAFT SEIS**

SEA received 13 comments on its analysis in the Draft SEIS regarding the project's potential impact on coal usage and the subsequent air quality impacts of burning this coal. These comments were submitted by EPA, Sierra Club, Minnesotans for an Energy-Efficient Economy (ME3), Powder River Basin (PRB) Resource Council, Western Coal Traffic League, DM&E, and 8 individuals.

Some of the comments supported SEA's methodology and conclusions and pointed to the public benefits of having a third rail carrier in the PRB (Western Coal Traffic League). Most of the other commenters generally supported SEA's decision to do a NEMS study. But some commenters questioned SEA's rationale for doing so and its conclusions on the potential for the project to have limited adverse air quality impacts. And some commenters requested more information about the inputs SEA gave EIA; suggested that the NEMS modeling period was not long enough; and/or requested clarification on some of the factors

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<sup>31</sup> Draft SEIS, at pages 4-52 to 4-53.

considered in NEMS. After carefully reviewing all of the comments, SEA grouped the substantive comments into four categories:

- Model Selection – Comments on the selection of the NEMS model and the decision to do a rate sensitivity analysis.
- Model Inputs – Comments on the input information used when running NEMS, particularly comments regarding the rail transportation rates.
- Model Results – Comments on the outputs, or results obtained in the running of the NEMS model.
- Air Quality Analysis Results – Comments on SEA’s analysis of the project’s potential changes to air quality based on the NEMS modeling results.

The following sections generally describe the concerns raised by the commenters regarding each of these issue areas and respond to the major concerns that commenters raised. Each comment is also set forth in its entirety and responded to in Appendix A of this Final SEIS.

### **4.3 MODEL SELECTION**

SEA’s selection of NEMS was based on several factors, discussed in detail in the Draft SEIS. These factors included:

- NEMS is one of only two models that are available for forecasting changes in energy demand, production, and associated air emissions changes.
- NEMS is the model used by the government for predicting energy use. The White House, Congress, and other Federal agencies (including the Board in rate cases) rely on information generated by NEMS.
- NEMS is the model used to supply energy-related data for IPM, the only other model that could have been used to provide meaningful results for the issue remanded by the court.

- NEMS is managed and controlled by another Federal agency, EIA, which agreed to conduct the necessary modeling as a service to SEA at no cost.

While the commenters generally agreed with SEA's decision to use NEMS for the air quality analysis in the SEIS—none of the commenters pointed to another model that should have been used—SEA did receive comments that were critical of SEA's rationale for using NEMS or asked questions about the application of the NEMS model for this case. These comments:

- suggested that a rate sensitivity analysis using NEMS was not the correct approach to use in this case (although they failed to present any alternative approach),
- expressed concern that SEA had selected the NEMS model solely because it was free of charge,
- suggested that SEA should have used NEMS to model more than 20 years into the future, and/or
- suggested that SEA should have clarified the factors that are considered in the NEMS model.

Each of these issues is discussed in the following subsections.

#### Selection of NEMS and the Decision to Do a Rate Sensitivity Analysis

The PRB Resource Council and the South Dakota Chapter of Sierra Club both suggested that SEA's selection of the NEMS model was based solely on EIA agreeing to conduct the NEMS modeling for SEA at no cost. However, as discussed in detail in the Draft SEIS (at pages 4-4 to 4-9) and noted above, SEA considered a number of factors when comparing the suitability of NEMS and other models to address the issues remanded by the court. Ultimately, NEMS was selected because it is a national forecasting model developed by the government and used by numerous government agencies (including the Board in rate cases) for energy related-issues and is capable of providing SEA the kind of data that would

allow SEA to respond to the court’s remand. Moreover, IPM, the only other national model that is available for forecasting changes in energy demand, production, and associated air emissions changes, relies on NEMS for its energy-related data. The fact that EIA agreed to run the model for the SEIS at no cost as a service to SEA made use of NEMS cost effective, as noted in the Draft SEIS, but was clearly not the sole basis for SEA’s determination that NEMS was the most suitable model to use in this case.

Sierra Club claims that a rate sensitivity analysis using NEMS was not the correct approach. Sierra Club seems to suggest that SEA was required to study the potential impacts of increased overall use of PRB coal in this SEIS, not just the additional amount of coal that would be burned as a result of this project. It is true that the EIS scoping notice in this case had stated that the Board would “[e]valuate the potential air quality impacts associated with the increased availability and utilization of Powder River Basin coal.” However, this does not—and cannot—mean that SEA should have evaluated the environmental effects of overall anticipated PRB tonnage growth as part of this case. The Board does not regulate the effects of coal usage on air quality. That is the role of other agencies such as EPA. The role of the Board and SEA, on remand, is to evaluate the effects of *this project* on PRB tonnage growth and the resulting air quality impacts. In Mid States, the court noted that “it is reasonably foreseeable—indeed, it is almost certainly true – that the *proposed project* will increase the long-term demand for coal and any adverse effects that result from burning coal.”<sup>32</sup> [Emphasis added.] In addition, the court noted that commenting parties had suggested models that “could be used to forecast the effects of *this project* on the consumption of coal.”<sup>33</sup> [Emphasis added.] Therefore, it was entirely appropriate for SEA’s Draft SEIS analysis to focus on the consequences of *this project* by using NEMS to look at how transportation rates would change with DM&E’s entrance into the marketplace and how air quality would be impacted by that change in transportation rates.

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<sup>32</sup> 345 F. 3d at 549.

<sup>33</sup> Id. at 550.

As SEA explained in the Draft SEIS, it used EIA's AEO2005 study as the "base case" with which to compare the effects of the DM&E project. As discussed in more detail below, the AEO2005 study predicts large growth in PRB coal usage regardless of whether this project is constructed. This increase in PRB coal usage could be fulfilled by productivity improvements or capacity expansions. Those capacity expansions could be from expanding the capacity of the existing rail carriers or from other construction projects, but they are not directly related to or part of this project. Moreover, EIA's AEO2005 tonnage growth forecasts do not violate air emissions regulations because the studies reflect all Federal, state, and local environmental regulations in effect at the time it makes its projections.<sup>34</sup> In short, by adjusting the transportation rates within NEMS to reflect the entrance of the DM&E into the marketplace and comparing those results to the AEO2005 base case, SEA has assessed exactly what the court requested—the long-term effects of this project on the consumption of coal and its impacts on air quality.

Sierra Club appears to object to any increase in coal required to satisfy the growing demand for energy in the United States. But the approval of the DM&E construction project should not become a venue for Sierra Club to air its greater national agenda. The court only required that SEA evaluate the air quality impacts of additional coal used as a result of this project. SEA has studied precisely that in its analysis and Sierra Club has failed to support its claim that SEA's approach to the required analysis is flawed.

ME3 also suggested that use of a national, "all-purpose" model may not have been appropriate for the remanded issue. Yet in another pending rail construction case—the Tongue River case (Docket No. FD 30186 Sub. No. 3), Tongue River Railroad Company, Inc. – Construction and Operation – Western Alignment—ME3 submitted comments suggesting that the Board use NEMS to forecast the location and amount of the increased air emissions in that case. In any event, neither ME3 nor any other commenter has shown that another model or approach exists that would have been preferable to the rate sensitivity

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<sup>34</sup> See Assumptions to the Annual Energy Outlook 2005.  
[http://www.eia.doe.gov/oiaf/assumption/pdf/0554\(2005\).pdf](http://www.eia.doe.gov/oiaf/assumption/pdf/0554(2005).pdf), page 6.

analysis using NEMS. Thus, for the reasons discussed above and in the Draft SEIS, SEA continues to believe that NEMS is the most appropriate model to use to address the remanded issue. The use of a national model was required because, while DM&E's primary markets are regional (including primarily the upper Midwest), SEA needed to evaluate PRB coal usage on both a national and a regional level in order to capture all the dynamics of the U.S. energy market, including other fuel sources like eastern coal and natural gas. And the rate sensitivity analysis gave SEA the information it needed to address the only air quality issue before the Board—the effects of *this project* on PRB tonnage growth and the resulting air quality impacts.

#### NEMS Modeling Period Was Not Long Enough

EPA and ME3 questioned whether the data projection period in NEMS was adequate to assess the long-term impact of this project. As discussed below, the modeling period in NEMS was appropriate for this case.

EIA's AEO2005 study, which, as previously noted, formed the base case to which the effects of the DM&E project were compared, uses the NEMS model to predict energy-related use for a 20-year period, extending from the present day (2005) to 2025. According to EIA, the NEMS model forecasts for at least 20 but not more than 25 years (depending on the study) into the future because the “technology, demographics, and economic conditions are sufficiently understood in order to represent energy markets with a reasonable degree of confidence.”<sup>35</sup> EIA believes longer forecasts for the energy-related data at issue here would be less reliable and more speculative, due to the highly fluctuating nature of the energy industry, including trends in fuel costs, changes in technology, and considerations of evolving and new industry regulation. Moreover, information on EIA's website<sup>36</sup> that evaluates how the EIA forecasts compare to what has actually happened demonstrate that EIA has done a commendable job of forecasting. No other energy-prediction models capable

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<sup>35</sup> See <http://www.eia.doe.gov/oiaf/aeo/overview/introduction.html>

<sup>36</sup> See <http://www.eia.doe.gov>

of providing SEA appropriate information with which to respond to the court's remand and that predict more than 20-25 years into the future are currently available.

ME3 notes that potential global warming impacts have been analyzed to the end of the century.<sup>37</sup> Although ME3 did not cite to a specific model capable of making predictions for that length of time, ME3 suggested that here modeling should have been conducted for at least 50 years and that it would have preferred modeling to the end of the century (2100). However, SEA is unaware of any other model with the ability to provide the necessary data for the air quality analysis in this case that would extend predictions beyond 20 years. In any event, there is no reason to believe that the 20-year predictions in NEMS failed to provide accurate and meaningful results.

It is also worth noting that use of the NEMS model may have overstated the near-term potential impact of the DM&E project on PRB coal usage and resulting air emissions. As explained in the Draft SEIS,<sup>38</sup> the Board's 1998 Decision anticipated that DM&E's entry into the PRB coal market would be gradual and that it would take DM&E six years from the completion of construction to becoming fully operational. For purposes of conducting the rate sensitivity analysis, however, the NEMS model assumes that DM&E would be fully operational in the first year of the NEMS forecast horizon (2005). As noted in the Draft SEIS,<sup>39</sup> this would tend to overstate the consumption of PRB coal in the initial years, thereby overstating project-related changes in PRB coal consumption and the potential impacts on air quality in the early years.

Finally, modeling beyond 20 years is not necessary in this case, because DM&E's influence on the marketplace as a result of this project would be fully realized within 20 years.<sup>40</sup> Any modeling beyond 20 years would be speculative because myriad other factors,

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<sup>37</sup> ME3 provided no information on where or by whom such global warming analysis had been conducted.

<sup>38</sup> Draft SEIS, at page 4-17.

<sup>39</sup> Id.

<sup>40</sup> EPA's comments suggest that only 15 years of DM&E's influence was modeled. In fact, however, NEMS modeled a full 20 years, extending from 2005 to 2025.

unrelated to the DM&E construction, could affect the energy marketplace and any resulting air emissions. For all these reasons, SEA continues to believe that use of NEMS and its 20-year predictions was reasonable and appropriate.

#### Factors Considered in NEMS

EPA and others requested clarification on the factors considered by the NEMS model. Specifically, EPA inquired whether the NEMS model reflected increases in natural gas prices. NEMS does take into account natural gas prices. As SEA noted in the Draft SEIS (pages 4-6 to 4-7), the NEMS model is a forecasting and predicting model that provides information on future energy-related issues. In doing so, NEMS looks at the entire breadth of the national energy marketplace, simulating energy demand, growth, new generation (by fuel type and amount), emerging technologies in energy production, government regulation, and cost (including fuel cost). NEMS reflects historical trends in the energy market place, including energy demand and fuel pricing, to forecast future demand, use, consumption, and pricing for energy and energy-producing fuels. The CMM within NEMS provides forecasts of U.S. coal production, consumption, exports, imports, distribution, and prices. Additional modules in NEMS consider similar trends for oil, natural gas, and other energy sources to forecast consumption, exports, imports, distribution, and prices of these fuels. All of these modules are run simultaneously to generate a prediction of the overall energy marketplace.

EPA questioned whether recent increases in the price of natural gas since the completion of the Draft SEIS would affect SEA's results. Figure 86 in the AEO2005 report forecasts that natural gas prices will peak in 2005, begin to drop until 2010, and then continue to increase again until 2025. EIA's AEO2005 report states that "[t]rends in delivered natural gas prices largely reflect changes in wellhead prices. Wellhead natural gas prices are projected to decline in the early years of the AEO2005 reference case forecast, as drilling levels increase, new production capacity comes on line and LNG [liquefied natural gas] imports increase in response to current high prices."<sup>41</sup> Therefore, the recent increases in

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<sup>41</sup> AEO2005 report. Available online at <http://www.eia.doe.gov>.

the price of natural gas cited by EPA are already reflected in EIA's forecast of natural gas prices, which is included in NEMS and, therefore, in SEA's analysis.

Finally, the PRB Resource Council suggested that EPA's IPM model should have been used to check the NEMS results. But as explained above and in the Draft SEIS (at pages 4-6 to 4-9), IPM relies on energy-related data (i.e., coal supply and demand forecasts) generated by NEMS for its inputs. Therefore, SEA sees no point in running IPM to confirm that the NEMS results are accurate. The same changes in the same inputs used by both models would likely yield the same outcome. In addition, no commenters caused SEA to doubt the NEMS results. As a result, no additional corroboration is required.

#### **4.4 MODEL INPUTS**

As explained in the Draft SEIS, SEA and EIA agreed that a transportation rate sensitivity analysis could be performed using NEMS. In order to conduct this sensitivity analysis, EIA requested that SEA provide a range of potential changes in rail transportation rates to be included in the NEMS modeling runs. Using a three-step process,<sup>42</sup> SEA determined that the likely change in transportation rates for coal from the PRB to DM&E's core markets would be an approximately 3.6 percent decrease (designated by EIA as the Low4pct scenario).<sup>43</sup> SEA asked EIA to run three other scenarios for comparison to better assess sensitivity of coal consumption to changes in transportation rates that could result from DM&E entering the market. Therefore, in addition to the Low4pct scenario, SEA requested that EIA also include a 3.6 percent increase (High4pct scenario), a 7.2 percent decrease (twice the expected 3.6 percent decrease, identified by EIA as the Low7pct scenario), and a 7.2 percent increase (to correspond with the 7.2 percent decrease, identified by EIA as the High7pct scenario).

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<sup>42</sup> Draft SEIS, at pages 4-10 to 4-18.

<sup>43</sup> Id.

SEA received four comments regarding the rate change inputs provided by SEA to EIA for running the NEMS model. These four commenters generally raised concerns related to (1) differences between the coal rail transportation costs discussed in the 1998 Decision versus the rail transportation rates used by EIA, (2) SEA's use of data from the 1998 Decision, and (3) the projections used by SEA for changes in rail transportation rates. Each of these topics is discussed below.

#### Rail Transportation Costs and Rates

Three commenters, including the PRB Resource Council, noted that in the 1998 Decision the Board had determined that rail transportation rates from the PRB would be likely to increase. They questioned the alleged inconsistency with SEA's assumption that PRB transportation rates will decrease. Additionally, one commenter asked whether the rates or costs for coal used by EIA included actual transportation rates.

There is no inconsistency between the analysis in the 1998 Decision and the sensitivity analysis because the rates being measured are not comparable. The rate discussion in the Board's 1998 Decision was addressed to the financial viability of DM&E's proposal. To make that assessment, the Board looked at the hypothetically *lowest rates* the two incumbent rail carriers in the PRB (BNSF and UP) could charge for coal transportation based on their cost structure—not the rates the two incumbents actually charged. These hypothetical rate floors reflected only the direct costs to the rail carriers (such as fuel, labor, and operation and maintenance costs) and an identified margin of profit. The rate floors were not intended to represent the actual PRB coal rates being charged by the incumbent carriers, but were hypothetical rates that the Board projected *could* result if BNSF and UP reduced their rates as low as possible to aggressively compete with DM&E. Based on these minimum rates, the Board found that DM&E would still be financially viable.

The Board's examination of the lowest possible rail rates UP or BNSF could charge in the 1998 Decision also assumed increases in rates from the start of DM&E's coal transportation operations. These increases would result from increases (at least comparable

to yearly inflation) in the railroads' operating and maintenance costs, such as fuel and labor. As these costs increased, the three railroads (BNSF, UP, and DM&E) would be required to increase their rates in order to continue to be profitable. In short, the projected rates in the 1998 Decision, although increasing over time, continue to reflect the minimum rates that a railroad could charge for PRB coal transportation while still making a minimal amount of profit.

In contrast to the hypothetically lowest transportation rates that could be charged, which were included in the Board's 1998 Decision, the rail transportation rates used by EIA in its sensitivity analysis and AEO2005 report reflect actual coal transportation rates charged in the market today. These rates are based on confidential information collected by FERC and EIA. Unlike the hypothetical rate information used in the 1998 Decision, EIA's rates reflect actual transportation rates charged in the market today. The downward trend in coal transportation rates used in NEMS reflects what has taken place over time in the rail industry, and which EIA forecasts will continue into the future. Actual rail transportation rates will always be equal to or greater than the minimum rates that railroads could charge in order for the rail carriers to make a profit. In short, the decreasing rates in NEMS are not inconsistent with the increasing rates in the 1998 Decision because the rates are not comparable and were used to evaluate different aspects of the case. As such, both the increase in hypothetical rates from a very low (and only marginally profitable) base rate used in the Board's 1998 Decision to assess the project's financial viability and the downward trend of actual rates in EIA's NEMS analysis are valid.

#### Current Rate Data Should Be Used

As discussed above and in the Draft SEIS, SEA selected the range of potential rate changes to be examined in the sensitivity analysis using the NEMS model based on the Board's assessment of the mileage savings of DM&E's route and expected market shares as determined in the 1998 Decision. SEA received two comments arguing that the rate information used in the sensitivity analysis was old and should have been updated.

According to the commenters, actual, current rail rates should be used for the study rather than relying on data from the 1998 Decision.

The 1998 Decision preliminarily approved the construction of DM&E's proposed line based on a record that was complete except for the environmental analysis. It was entirely reasonable for SEA, on remand, to rely on data from the 1998 Decision. As SEA explained in the Draft SEIS (at page 4-11), there is no available information on the specific rates that DM&E might ultimately decide to charge for this coal traffic. Moreover, the court in Mid States (345 F. 3d at 550-552) specifically rejected the argument that the Board should have updated the traffic and profitability projections relied on in the 1998 Decision, which certain commenters had argued were outdated, prior to the Board giving final approval for DM&E to construct and operate the new line in the 2002 Decision. See also 345 F. 3d at 556 (expressing confidence that "on remand the Board will quickly address those few matters [the court had] identified as requiring a second look").

In any event, actual transportation rates for PRB coal *are* reflected in the sensitivity analysis that EIA performed for SEA because EIA applied SEA's percentage changes—based on the rate information in the 1998 Decision—to the actual transportation rates contained within NEMS in order to model the potential impacts of the project on coal usage and resulting air emissions. As discussed above, the NEMS model reflects current, actual rail rate data for its transportation costs.

#### SEA's Projected Changes in Transportation Rates

ME3 commented that construction and operation of the project "could produce a greater level of cost savings, up to a full 5.8 percent based on haulage distance, or even greater if current transport prices reflect some exercise of market power." ME3 also commented that it had reason to believe the project "could reasonably have greater impacts than those modeled in the 'Low4pct' case," although it did not provide those reasons. But as SEA now explains, the range of alternative transportation rates considered in the sensitivity analysis was reasonable and appropriate.

As discussed above, for the NEMS analysis, SEA determined that a 3.6 percent decrease in rail transportation rates was the most likely scenario to result from construction and operation of the project. However, SEA requested EIA to conduct its rate sensitivity analysis using 4 different scenarios: (1) a 3.6 percent reduction in rail transportation rates; (2) a reduction twice that size (7.2 percent); (3) an increase in transportation rates comparable to the decrease in the first scenario; and (4) an increase comparable in size to the decrease in the second scenario. As explained in the Draft SEIS, SEA believed that, by examining various alternative scenarios, SEA would be better able to evaluate the extent to which DM&E's entrance into the PRB marketplace, and any changes in rail rates that could result, would affect usage of PRB coal and resulting air emissions.

ME3's comments seem to indicate that SEA should have evaluated reductions in cost savings greater than the most likely 3.6 percent scenario (called the Low4pct scenario by EIA). In response, SEA points out that SEA did precisely that sort of evaluation because SEA asked EIA to include, in the rate sensitivity analysis, a 7.2 percent reduction in transportation rates (Low7pct scenario). SEA presented the results of the Low7pct scenario in the Draft SEIS.<sup>44</sup> As discussed in detail in the Draft SEIS, this analysis showed that little additional coal would be consumed nationally or regionally as a result of this project under either the Low4pct or Low7pct scenarios. Nothing in the comments on the Draft SEIS indicates that the range of alternative transportation rates in the sensitivity analysis performed for SEA was not sufficiently broad.

## **4.5 MODEL RESULTS**

SEA received five comments, including comments from EPA, ME3, and Sierra Club, raising questions about the amount of additional coal that the rate sensitivity analysis found would be used as a result of this project. SEA addresses these comments below.

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<sup>44</sup> Draft SEIS, Chapter 4, Tables 4-5, 4-6, 4-8, 4-10, 4-12, 4-14, 4-16, 4-17, 4-18, 4-21, and 4-23.

Contrary to the claims of some commenters, SEA sees no discrepancy between, on the one hand, the EIS and the Board's determination in the 1998 Decision that this project would be financially viable because of increased demand for coal, and, on the other hand, the results of the NEMS modeling showing the impacts of additional coal. There is no question that the overall demand for PRB coal is projected to increase. In the Final EIS issued in 2001, SEA projected that the demand for Wyoming PRB coal would increase from 336.5 million tons in 1999 to more than 400 million tons in 2020.<sup>45</sup> EIA's recent AEO2005 report confirms that there will be an increase in demand for PRB coal. Indeed, the AEO2005 study indicates that Wyoming PRB coal production is anticipated to be substantially greater than what SEA had estimated for the Final EIS: 538 million tons by 2015 and 633 million tons by 2025.<sup>46</sup> This represents an increase in Wyoming PRB coal production between 1999 and 2025 of 296.5 million tons. Therefore, both the EIS and the Draft SEIS properly anticipate large increases in PRB coal usage between now and 2025.

However, the projected increase in demand for PRB coal does not cast doubt on the conclusion in the rate sensitivity analysis that the national or regional impacts of DM&E's entry into the PRB marketplace would add little *additional* coal to this projected increase. That is because the projected increase in demand for PRB coal would occur even *without* construction and operation of the project (i.e., as a result of factors such as the growth of the domestic economy, the Clean Air Act Amendments of 1990, electric power deregulation, and the cost of coal versus natural gas). Moreover, the anticipated growth in overall demand for PRB coal would far exceed the maximum 100 million tons of coal that DM&E has indicated it could transport due to constraints on its system.

Some commenters including Sierra Club and the South Dakota Chapter of Sierra Club suggest that, because DM&E would offer lower-cost transportation of PRB coal, the proposed rail line project would result in a much greater increase in PRB coal usage than

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<sup>45</sup> Final EIS, at page 2-14.

<sup>46</sup> Draft SEIS, Appendix G, Tables 4 and 5, at pages 6-7.

would otherwise be the case. However, as discussed in more detail above and in the Draft SEIS, the sensitivity analysis took into consideration the likely transportation rate savings of DM&E and DM&E's projected market share and found that the resulting change to overall transportation rates would be relatively minor. As a result, the project-related changes in transportation rates translate to minor changes in additional coal usage, on a national and regional basis, and there is no way to accurately predict what the impacts of this project would be on a local basis, as the Draft SEIS thoroughly explained.

Sierra Club incorrectly suggests that SEA has merely reasserted the analysis that the court in Mid States had rejected. Rather, as SEA has described at great length, to study the air emission issue remanded by the court, SEA developed a rate sensitivity analysis using the NEMS model to forecast how much additional coal would, or would not be, consumed as a result of this project.

As discussed above, Sierra Club appears to suggest that SEA was required to assess the potential impacts of increased overall use of PRB coal rather than the air quality impacts of any changes in coal usage resulting from this specific project. But the issue before the Board on remand in this case is simply whether *this project* will increase coal usage and thereby adversely affect air quality. Therefore, SEA has properly focused on how much additional coal would be used over and above the increases already forecast by EIA in the AEO2005 report.

Neither Sierra Club nor any other commenter has shown that the inputs SEA developed for its rate sensitivity analysis were not appropriate or that a model other than NEMS would have provided more accurate results. The fact that SEA's conclusions on national and regional impacts may differ from the mere assertion of Sierra Club that coal use must necessarily be greatly increased as a result of this project—and that the information that would be needed to accurately predict the location and extent of any local impact on coal usage is not available—does not invalidate SEA's conclusions or show that SEA's evaluation

was not thorough and extensive. Rather, as the SEIS shows, SEA has done the additional analysis required by the court.

Sierra Club also mischaracterizes SEA's conclusions in the Draft SEIS when it suggests that SEA here has simply found that the impacts of this project on air emissions are not foreseeable or are speculative. As explained above and in Chapter 4 of the Draft SEIS, the NEMS modeling provides ample documentation for SEA's conclusion that, on a national and regional basis, there would be only minor impacts on coal usage and resulting air emissions at power plants if the proposed line is constructed and operated. As the Draft SEIS makes clear, it is only the potential *local* impacts of this project on coal usage and resulting emissions that cannot be accurately predicted using NEMS.

Because of the inherent uncertainty and data gaps discussed in detail in Chapter 4 of the Draft SEIS (and summarized above), SEA reasonably concluded that any attempt to quantify air emissions on a local basis would lack a sound foundation and would instead be largely conjectural. (Indeed, it is worth noting that EPA, in its comments on the Draft SEIS, concurred in SEA's determination that it would be difficult to specifically determine the local area impacts caused by future coal usage from this project.) Under these circumstances, SEA appropriately followed the process set out in the CEQ rules at 40 CFR 1502.22 for situations where the information needed to examine reasonably foreseeable impacts is missing and unavailable, as the court in Mid States specifically acknowledged that SEA might do on remand. In short, Sierra Club is taking SEA's determinations regarding potential *local* impacts and applying them to its conclusions regarding national and regional impacts, which is both inappropriate and incorrect.

Finally, contrary to Sierra Club's claims, SEA's analysis did not overlook the Sierra Club's concern that the proposed project, by adding 100 million tons of new coal to the marketplace, would result in "shift[ing] the supply curve – causing a decrease in the price of coal and thus more consumption of it." At the outset, neither SEA nor the Board have suggested that 100 million tons of *new* coal will be transported as a result of this project, only

that DM&E is expected to transport up to as much as 100 million tons of coal. Specifically, as previously noted, the Final EIS anticipated production of 336.5 million tons of coal from the PRB in 1999 and the AEO2005 reference case forecasts 497 million tons from the PRB in 2010—an increase of 160 million tons. The Board’s prior decisions expected the DM&E would handle a maximum of 100 million tons of coal in 2010. The maximum 100 million tons of coal DM&E would carry is expected to come from the already-forecasted increase in PRB production between now and 2010. Therefore, SEA’s rate sensitivity analysis already assumes more than 100 million tons of additional PRB coal production and properly found that the lower transportation costs that would result from this project would have minor effects on coal usage and resulting air emissions, at least on a national and regional basis.

Sierra Club seems to assume that any increase in demand for PRB coal up to 100 million tons would be met by DM&E alone. But there is every reason to believe that, regardless of whether DM&E were to enter the PRB transportation market as a third competitor, the expected year-by-year increases in demand for PRB coal would be met by the existing carriers increased productivity or expanding capacity on their existing routes. Both BNSF and UP have recently rehabilitated and expanded their own PRB routes by double-tracking and triple-tracking. They have every incentive to continue to increase their capacity to meet future increases in demand, given the fact that coal traffic is profitable and the rates applied to movements requiring expanded capacity would likely support any infrastructure improvements BNSF or UP might have to make. Thus, Sierra Club has not cast doubt on the conclusion of the rate sensitivity analysis that, to the extent there is an increase in demand for PRB coal in the future, very little of it would be attributable to this project.

ME3 is concerned that Table 4-8 on page 4-25 of the Draft SEIS shows no change in national total power generated from coal under four of the five scenarios studied for 2015, namely the AEO2005 base case scenario, the Low4pct scenario, the High4pct scenario, and the High7pct scenario. As ME3 notes, each of these scenarios indicates 2,285 billion kilowatt-hours of power generated from coal in 2015. However, SEA does not believe that this shows that any of the conclusions reached in the rate sensitivity analysis are incorrect.

The changes in transportation rates that would result from this project are relatively small. Therefore, it is reasonable for the study to show little change in the overall amount of electricity generated by coal-fired utilities across any of the rate scenarios studied. It is possible that variations in power generation from coal that would result from this project could be in the *millions* of kilowatt-hours and still not be reflected in this table, which is expressed in *billions* of kilowatt-hours.

ME3 further points out that Table 4-8 indicates that lowering the delivered price of coal seems to cause the amount of generation from coal to decrease on a national basis, because the Low7pct scenario in 2025 (2,871 billion kilowatt-hours) is 5 billion kilowatt-hours less than the Low4pct case (2,876 billion kilowatt-hours). However, this allegedly counterintuitive result disappears when the regional results for those regions that would be affected by the DM&E construction, namely ECAR, MAIN, MAPP, SERC, and MAAC are considered.<sup>47</sup> The sum of the generation from coal of these five regions in 2025 is 1,828 billion kilowatt-hours for the Low4pct scenario and 1,830 billion kilowatt-hours for the Low7pct scenario. This indicates that there would be, in the regions directly affected by the DM&E project, an additional 2 billion kilowatt-hours generated from coal and associated with the lower transportation costs that would result from completion of this project.<sup>48</sup> To the extent there is a discrepancy in the national totals, SEA assumes that it was caused by some other market forces—and not the potential impact of the proposed DM&E construction.

Finally, in response to comments regarding whether there is still a need for the project if DM&E's entry will result in little additional coal usage, SEA points out that the comments of the Western Coal Traffic League and others state that increased rail capacity in the PRB is needed to meet the growing demand for PRB coal due to factors other than this project and explain that the project would help meet this demand. In any event, whether there is a need for this line is not an issue before SEA in performing an environmental review in this SEIS.

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<sup>47</sup> Draft SEIS, Table 4-3.

<sup>48</sup> *Id.*, Appendix G, Table 5.

In summary, overall PRB coal production is anticipated to increase significantly in the years to come, whether or not the DM&E line is built. This projected increase supports the Board's conclusion in the 1998 Decision that the DM&E construction project would be financially viable. As the 1998 Decision explained, DM&E's ability to become a viable competitor would largely result from DM&E's ability to offer utilities lower coal transportation rates than BNSF or UP as a result of its shorter route. When these lower transportation rates for PRB coal were modeled for the Draft SEIS, the sensitivity analysis showed that the increase in demand that would result solely from DM&E's entry into the marketplace would not be significant. The commenters have not shown that SEA's analysis or results were incorrect. Accordingly, SEA reaffirms the results of the rate sensitivity analysis set out in the Draft SEIS showing that DM&E's proposed project would have little additional impact on the overall growth and demand for PRB coal.

## 4.6 AIR EMISSIONS RESULTS

### Conclusions of the Draft SEIS

Using the rate sensitivity analysis results for coal usage that would result from this project, SEA evaluated the potential associated impacts on electric power sector emissions. As explained in more detail in the Draft SEIS, SEA found that the small changes in PRB coal usage as a result of this project would translate to minimal changes in emissions from the electric power sector, both nationally and regionally.<sup>49</sup> SEA further found that any changes in national or regional SO<sub>2</sub>, NO<sub>x</sub>, and mercury emissions would be constrained by applicable environmental laws, including EPA's recently adopted mercury rule, which was not reflected in the NEMS study.<sup>50</sup>

SEA indicated that, while the local impacts that the project might have could not be determined using the NEMS model, SEA could not rule out increased air emissions due to

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<sup>49</sup> Draft SEIS, at pages 4-28 to 4-41 and 4-52 to 4-53.

<sup>50</sup> Id., at pages 4-34 to 4-38 and 4-42.

local increases in PRB coal consumption, particularly if the relatively small amount of additional coal consumed as a result of this project would be used by a small number of power plants concentrated within a narrow geographic area.<sup>51</sup> SEA stated, however, that because the information necessary to determine the potential impacts on local air quality, including the specific locations and amounts of additional coal consumption at particular power plants that might use DM&E to transport PRB coal, could not be determined with any degree of confidence for a variety of reasons,<sup>52</sup> it had instead complied with the CEQ's procedures at 40 CFR 1502.22(b) for addressing local impacts when the information needed to examine reasonably foreseeable impacts is missing and unavailable, as suggested by the court in Mid States.

Finally, SEA pointed out in the Draft SEIS that any significant changes in the blend of coals burned by individual power plants that might use PRB coal transported by DM&E (or new power plants that are built) would be subject to the requirements imposed by all applicable environmental laws and other regulatory constraints. Given the minor increase in coal consumption and air emissions on a national and regional basis, the lack of critical information needed to quantify impacts on a local basis, and the fact that the Board could not impose environmental mitigation directly on power plants in a rail construction case, SEA did not recommend additional air quality mitigation beyond that previously imposed by the Board in the Draft SEIS.

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<sup>51</sup> *Id.*, at pages 4-51 to 4-52.

<sup>52</sup> As SEA explained in the Draft SEIS (at pages 4-42 to 4-43), to be able to reasonably foresee the likely impacts of this project on a local level, one would need to know not only what existing or future power plants would actually use DM&E's service, but also whether they would otherwise not burn PRB coal, not burn as much coal, or burn a different mix of coal. This could not be determined with any degree of confidence in this case, because DM&E does not yet have any commitments from utilities to serve specific power plants (and is not likely to have such commitments before the railroad is actually in a position to transport PRB coal); DM&E's core markets cover a broad geographic area and DM&E would likely serve only a portion of the plants in each market; for existing plants that already use PRB coal, DM&E's service would simply substitute for PRB coal now carried by UP or BNSF; how much PRB coal a power plant decides to use depends on myriad other factors (including the price of coal versus the cost of alternative fuels, the requirements of applicable environmental laws at the time, the state of the nation's economy and power needs, and whether the plant is equipped to burn PRB coal); new power plants will be built that may use PRB coal regardless of whether the proposed DM&E line is built; and mercury regulation may lead to decreased reliance on PRB coal in the future, as PRB coal is higher in mercury than other coals.

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## Comments Received on the Draft SEIS

Comments on SEA's air emissions analysis generally fell within the following categories:

- overall analysis,
- evaluation of local air emissions impacts, and
- consideration of how changes in the regulations regarding air emissions would impact air quality and the potential production and consumption of coal.

Each of these areas is addressed below.

### SEA's Overall Air Emissions Analysis

Sierra Club suggested that SEA has not been sufficiently responsive to the court's remand. Sierra Club takes the position that the court's decision directing the Board to evaluate the effects that may occur as a result of the reasonably foreseeable increase in coal consumption required an evaluation of air quality issues such as global warming and acid rain.

SEA disagrees that the scope of its analysis was inadequate. As directed by the court in Mid States, SEA conducted a thorough and extensive evaluation of how PRB coal usage would change with reduced transportation rates that would likely result from DM&E's entrance into the marketplace and what effect, if any, these changes would have on air emissions. In doing so, SEA detailed the existing credible scientific evidence on each of the primary pollutants that are emitted by power plants: SO<sub>2</sub>, NO<sub>x</sub>, carbon monoxide, particulate matter, CO<sub>2</sub>, and mercury.<sup>53</sup> This discussion specifically acknowledged that acid rain results from SO<sub>2</sub> and NO<sub>x</sub> emissions<sup>54</sup> and that CO<sub>2</sub> is a greenhouse gas that contributes to global warming.<sup>55</sup> But the modest project-related increases in overall coal usage found in the

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<sup>53</sup> Draft SEIS, at pages 4-45 to 4-51.

<sup>54</sup> Id., at pages 4-45 to 4-47.

<sup>55</sup> Id., at pages 4-49 to 4-50.

NEMS study imply that any impacts of this project on global warming must necessarily be modest as well. Thus, this case would not be the proper vehicle in which to address Sierra Club's concerns about global warming.

#### Evaluation of Local Air Emissions Impacts

As noted above, SEA indicated in the Draft SEIS that, whereas the NEMS analysis showed that, both regionally and nationally, the impact of this project on air emissions would be nearly unchanged, SEA could not rule out the possibility that there would be increased air emissions locally in some places due to local increases in PRB coal usage.<sup>56</sup> However, the information necessary to determine the potential impacts on local air quality, including specific locations and amounts of additional coal usage at those locations was not available and could not be determined, so that any attempt to quantify any increase in air emissions on a local basis would be largely conjecture and would lack a sound foundation. Therefore, SEA complied with the CEQ's procedures at 40 CFR 1502.22(b) for addressing local impacts when the information needed to examine reasonably foreseeable impacts is missing and unavailable.

Of the 13 comments SEA received on its air emissions analysis, several commenters, including the Western Coal Traffic League, essentially agreed with SEA's conclusion that sufficient data is not available or knowable to determine with any level of certainty the extent of any potential impacts on local air quality resulting from the project. Additionally, EPA indicated that it would be difficult to evaluate potential local impacts, given the particular circumstances of this project. While some of the other commenters requested more information on what the local impacts of this project on air emissions might be, the commenters generally acknowledged that, because specific information on where the additional coal actually would be burned as a result of this project is unavailable, a meaningful evaluation of local air quality impacts would not be possible. Moreover, none of the commenters argued that NEMS—or any other model—could have been used to better assess potential local impacts. Therefore, while understanding the desire of some of the

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<sup>56</sup> Id., at page 4-42 to 4-52.

commenters for additional information on the potential impact on local air emissions, SEA reaffirms its conclusion in the Draft SEIS that the data necessary for this analysis simply is not available, and that, accordingly, applying the procedures of 40 CFR 1502.22 (b) was fully appropriate in this case.

None of the commenters disagreed with the conclusion in the Draft SEIS that the Clean Air Act would dampen any changes in SO<sub>2</sub> and NO<sub>x</sub> emissions that result from this project—power plants must comply with mandated emissions levels even if they change their coal use—and that these emissions would be further reduced by CAIR, adopted after EIA’s rate sensitivity analysis was performed in this case.<sup>57</sup> SEA did receive comments questioning its conclusion that potential increases in mercury and CO<sub>2</sub> emissions associated with the increased production and consumption of PRB coal resulting from the project would likely be minor. But as SEA indicated in the Draft SEIS, the NEMS study showed that national increases in mercury emissions as a result of the project would be less than one percent, and the regional increases shown in the sensitivity analysis would be reduced somewhat by EPA’s new mercury rule that was not reflected in the NEMS study.<sup>58</sup> Additionally, the NEMS study indicated that increases in CO<sub>2</sub> emissions would be below one percent on a national basis and no more than 0.2 percent in any region.<sup>59</sup> Based on these findings, SEA reasonably concluded in the Draft SEIS that increases in both mercury and CO<sub>2</sub> as a result of this project would be minor. Nothing in the comments showed that SEA (or EIA) erred in conducting the sensitivity analysis or that use of another model or another approach would have been preferable.

#### Consideration of Regulatory Changes

ME3 generally argued that changes in air emissions regulations would reduce the demand for PRB coal, resulting in the project being unneeded. It pointed out that changes in the SO<sub>2</sub> regulations could lead to power plants installing scrubbers to further reduce emissions, which allegedly would reduce the demand for PRB coal as these plants would

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<sup>57</sup> Id., at page 4-28 and Appendix G, EIA Report, at page 6.

<sup>58</sup> Id., at pages 4-34 to 4-38.

<sup>59</sup> Id., at pages 4-32 to 4-34.

then be more likely to burn higher sulfur, higher heat-generating (i.e., high btu) coals. Other commenters similarly commented that any implementation of government regulations of CO<sub>2</sub> emissions could reduce the demand for fossil fuels in favor of cleaner, non-CO<sub>2</sub> generating fuels, such as natural gas.

As an initial matter, SEA reiterates that whether or not this project is needed is not an issue before SEA in performing an environmental review for this case.<sup>60</sup> Rather, as directed by the court in Mid States, SEA's role here is simply to determine what, if any, air emission impacts would result from increased coal usage that might result from lower transportation rates as a result of the DM&E project.

Commenters including ME3, the South Dakota Chapter of Sierra Club, and Sierra Club correctly note that recent changes in environmental regulations will likely reduce the effects on air emissions of lower transportation rates that might result from this project. EIA's report states, "In accordance with EIA practice, only current laws and regulations are incorporated into the AEO2005 projections. Proposed rules or regulations that have not been finalized are not included. Of particular importance for this analysis, EPA's proposed Clean Air Interstate and Clean Air Mercury Rules are not included in the AEO2005. The enactment of these rules would have a significant impact on future power plant emissions and this should be kept in mind when reviewing the results of this analysis."<sup>61</sup> More specifically, EIA's report indicates that, "implementation of EPA's Clean Air Interstate and Clean Air Mercury Rules will likely result in lower emissions of SO<sub>2</sub>, NO<sub>x</sub>, and mercury in all of the cases discussed. Actions taken to comply with these rules would likely further dampen the impacts of the changes in coal transportation rates proposed by STB."<sup>62</sup> Therefore, as SEA stated in the Draft SEIS,<sup>63</sup> the new regulations will reduce the air emission impacts the study found would occur as a result of this project.

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<sup>60</sup> The Board is charged with weighing the need for the project against its environmental effects.

<sup>61</sup> Draft SEIS, Appendix G, EIA Report, at page 1.

<sup>62</sup> Id. at page 8.

<sup>63</sup> Draft SEIS, at page 4-52.

ME3 is also correct that changes in applicable environmental laws could reduce the need for increased capacity into the PRB to some extent. However, because of electric power deregulation and other pressures on the utility industry to reduce costs, there is no good reason to doubt that the economical nature of PRB coal (which is relatively inexpensive to mine compared to other coals) would likely continue to make it an attractive fuel source, particularly to those facilities already using it, even if new laws require reduced emissions from fossil fuels in the future. Depending on the circumstances, retrofitting existing facilities that burn PRB coal to comply with new regulatory requirements could prove more economical than conversion to other fuel sources, particularly natural gas, which continues to increase substantially in cost.<sup>64</sup> Therefore, even if the recently enacted regulatory changes or future regulatory changes reduce the attractiveness of PRB coal to some extent, an overall trend of increased demand for PRB coal is still likely.

Finally, SEA received comments indicating that it should have considered the potential impacts of any future regulations encompassing emissions of CO<sub>2</sub>, a greenhouse gas currently not regulated in the United States but for which there has been much discussion of the potential need for regulation. However, because no such regulations have yet been enacted, any attempt to predict when they might take affect or what the requirements of the regulations would be purely conjectural. In addition, SEA notes that, as indicated in the Draft SEIS,<sup>65</sup> it is likely that the rate sensitivity analysis performed for this case, using NEMS, overstated air emission impacts of the project. Should additional environmental regulations be enacted, they would serve to further reduce the impacts on air emissions potentially associated with the project. In other words, further government air pollution regulation would lead to cleaner air and even less of an impact than the minor changes in

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<sup>64</sup> Coal-fired power plants are designed to burn a specific coal (possibly even from a specific mine) or mix of coals in order to function properly and efficiently. This is a result of the varying chemical properties of different types of coal. Power plants are not like a coal or wood stove in a home, in which almost any type of coal or wood can be burned to generate heat. As such, changing the type or mixture of coal used by a power plant involves far more than burning different coal. Conversion to different coal types typically requires expensive modifications to plant infrastructure, including furnace and boiler systems. These conversions may take several years to design and implement.

<sup>65</sup> Draft SEIS, at page 4-17.

overall air quality resulting from project-related increased coal usage that SEA identified in the Draft SEIS.

#### **4.7 SUMMARY**

As directed by the court, SEA conducted a thorough and extensive analysis in the Draft SEIS to determine how consumption of PRB coal would change with reduced transportation rates that might result from DM&E's entrance into the PRB marketplace and what effect, if any, these changes would have on air emissions. SEA first reviewed available models and determined that the NEMS forecasting model would be the best model to use for this case. SEA then coordinated with EIA and a rate sensitivity analysis was conducted, using NEMS, to compare coal usage (and resulting air emissions) with and without this project.

Based on the rate sensitivity analysis, SEA concluded in the Draft SEIS that little additional coal would be consumed nationally or regionally as a result of this project. SEA further determined that the associated impacts on national air emissions would be minor; that regional impacts on air emissions would generally be small; and that the projected regional increases in air emissions would be offset by decreases in other regions and constrained by applicable environmental laws. SEA acknowledged that it could not rule out that, at certain locations, there could be more significant increases in PRB coal consumed as a result of this project, potentially resulting in increased air emissions on a local level. However, as specific information on the location and amount of consumption of additional PRB coal is unavailable and any attempt to predict and evaluate increased air emissions on a local level would be largely speculative, SEA followed, as suggested by the court in Mid States, the established procedures in the CEQ regulations at 40 CFR 1502.22(b) for addressing impacts where critical information is unavailable or incomplete. Given the minor increases in coal consumption on a national and regional basis, the lack of critical information needed to quantify impacts on a local basis, and the fact that the Board could not, in any event, impose

environmental mitigation directly on power plants in a case involving a railroad's request for authority to construct and operate a rail line, SEA did not recommend in the Draft SEIS additional air quality mitigation beyond that previously imposed by the Board.

SEA received 13 comments on its analysis. These comments generally can be categorized as pertaining to:

- the selection of the NEMS model.
- inputs for the rate sensitivity analysis using the NEMS model, particularly the project-related transportation rate reductions.
- NEMS modeling results.

For the reasons explained in this chapter of the Final SEIS, SEA determined that the comments received did not require further analysis or additional modeling using NEMS or any other model. They did, however, warrant a further explanation of the rate sensitivity analysis and the conclusions that SEA reached on the remanded air emissions issue. SEA has provided this clarification and additional explanation in this chapter. Copies of all of the comments received on this issue and individual responses to each of those comments can be reviewed in Appendix A – Comments and Responses. For the reasons discussed above, SEA stands by the analysis and the conclusions in Chapter 4 of the Draft SEIS on the air emissions issue remanded by the court and is not recommending any additional air quality mitigation should the Board again authorize the construction and operation of this line.

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